MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2015/2016

EME4196 – QUALITY ENGINEERING

(All sections / Groups)

6 OCTOBER 2015
2:30 p.m. – 4:30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of **2** pages excluding cover page with **4** Questions only.
2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

Question 1.

(a) The role of Marketing as the heart of the business success cannot be underestimated. Although marketing can take up a large portion of a business's budget, its success in supporting and improving many current products market share is relatively efficient.

Assume you have just been employed by a company manufacturing high-end smartphones. One of the underlying problems the company faced was the sales of its latest smartphone model was not as good as expected. You found that this was due to the company policy on not allocating budget for marketing purposes.

Since you had taken the Quality Engineering subject in your studies, you are aware of the importance of Marketing. Therefore prepare a proposal to the CEO of the company **describing** the functions and importance of Marketing. [17marks]

(b) The Lean Six Sigma approach combines both the benefits of Lean Manufacturing's concept of elimination of waste with the Six Sigma's effective problem-solving methodology. Organizations which have implemented Lean Six Sigma have an improved culture that benefits all stakeholders.

Explain the effective management practices that many leaders in Lean Six Sigma organizations have successfully implemented. [4 x 2marks]

Question 2.

(a) The Cause-and-Effect Diagram is a useful technique which can be used to identify many possible causes for a problem. It is known also as the Fishbone or Ishikawa Diagram.

(i) **List** down the steps in the construction of the Cause-and-Effect Diagram. [5marks]

(ii) **Explain** (with relevant examples) how the benefits of this technique is applicable in a project meeting involving team members from different departments such as production, product development, process engineering and quality assurance. [4 x 5marks]

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Question 3.

(a) Reliability is generally defined as the ability of a product to perform as expected over time. **Describe** other possible fundamental definitions of reliability. [4marks]

(b) The type of test carried out in life and reliability testing is influenced by the economic factor. Although most of the testing experiments are usually done in the laboratory, it is important to try to simulate as close as possible the real environment under the controlled conditions.

(i) **Explain** the different types of life-test plans commonly used. [3 x 3marks]

(ii) An improved method of these life-test plans is the Accelerated Life Testing (ALT) methods which are able to provide statistical assurance. **Explain** the commonly used ALT tests. [3 x 4marks]

Question 4.

(a) The top management in an organization should first learn and understand about the various theories, models and techniques. With this proper training, they are then able to initiate and effectively lead the quality management efforts in their organizations.

One model combines the theoretical base of Dr. Deming's System of Profound Knowledge with the practical base of the administrative systems of Japanese Total Quality Control. In addition, this particular model is viewed and shaped like a fork.

Explain what is represented by the fork handle, neck and three prongs. [4+3+9marks]

(b) According to International Organization of Standardization (ISO), there are several potential tangible economy benefits gained from implementation of ISO 14000. Assume you have just been employed as the operations engineer in a palm oil processing mill. **Explain** the relevance of the abovementioned benefits to the CEO of the company. [9marks]

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